

## **Claims**

1. An apparatus, comprising:
  - a) a threshold calculation unit having an input that receives an input signal, said threshold calculation unit having an output that provides a threshold to slice said input signal, said threshold calculation unit having a first bandwidth and a second bandwidth, said first bandwidth greater than said second bandwidth; and
  - b) a feedback loop that receives an indication of the difference between said input signal and said threshold, said feedback loop having an output that controls which of said bandwidths said threshold calculation unit calculates said threshold according to, said feedback loop output indicating said first bandwidth if an absolute value of said difference is greater than a first value, said feedback loop output indicating said second bandwidth if said absolute value of said difference is less than said first value.
2. The apparatus of claim 1 wherein said first value corresponds to an amplitude of a waveform of said input signal.
3. The apparatus of claim 1 wherein said threshold calculation unit computes an average of said input signal.

4. The apparatus of claim 3 wherein said first and second bandwidths each correspond to a different extent over which said input signal is averaged, said input signal averaged over a greater extent for said second bandwidth than said first bandwidth.
5. The apparatus of claim 1 wherein said threshold calculation unit corresponds to a low pass filter.
6. The apparatus of claim 5 wherein said low pass filter is an infinite impulse response filter.
7. The apparatus of claim 1 wherein said input is coupled to an A/D converter.
8. The apparatus of claim 1 further comprising a comparator having an output that provides said sliced input signal, said comparator output equal to a first logic level if said input signal is greater than said threshold, said comparator output equal to a second logic level if said input signal is less than said threshold.
9. The apparatus of claim 8 wherein said comparator output is coupled to a correlator.

10. The apparatus of claim 1 wherein said feedback loop output provides a first bandwidth parameter that sets said first bandwidth and a second bandwidth parameter that sets said second bandwidth.
11. The apparatus of claim 10 wherein said first and second bandwidth parameters respectively correspond to a first gain parameter and a second gain parameter, said threshold calculation unit corresponding to a low pass filter, said first gain parameter setting said first bandwidth, said second gain parameter setting said second bandwidth.
12. The apparatus of claim 1 wherein said feedback loop further comprises an absolute value unit having an input coupled to said feedback loop input, said absolute value unit having an output coupled to a first input of a comparator, said comparator having a second input coupled to said first value, said comparator having an output coupled to a channel select input of a multiplexer, said multiplexer having an output coupled to said feedback loop output, said multiplexer having a first input that provides said indication of said first bandwidth, said multiplexer having a second input that provides said indication of said second bandwidth.

13. A method, comprising:

determining a difference between a signal and a threshold used to slice said signal;

calculating said threshold according to a first bandwidth if an absolute value of said difference is greater than a first value;

and

calculating said threshold according to a second bandwidth if said absolute value of said difference is less than said first value, said first bandwidth greater than said second bandwidth.

14. The method of claim 13 wherein said first value corresponds to an amplitude of a waveform of said signal.

15. The method of claim 13 wherein said calculating further comprises computing an average of said input signal.

16. The method of claim 15 wherein said bandwidths each correspond to a different extent over which said signal is averaged, said input signal being averaged over a greater extent for said second bandwidth than said first bandwidth.

17. The method of claim 13 wherein said calculating further comprises passing said signal through a low pass filter.

18. The method of claim 17 wherein said low pass filter is an infinite impulse response filter.
19. The method of claim 13 wherein said signal further comprises digital words that correspond to samples of an analog signal.
20. The method of claim 13 further comprising providing said sliced input signal by presenting a first logic level if said input signal is greater than said threshold and presenting a second logic level if said input signal is less than said threshold.
21. The method of claim 13 further comprising correlating said sliced input signal with a sought for pattern.
22. The method of claim 13 further comprising providing to an threshold calculation unit a first bandwidth parameter that sets said first bandwidth and a second bandwidth parameter that sets said second bandwidth.
23. The method of claim 22 wherein said first and second bandwidth parameters respectively correspond to a first gain parameter and a second gain parameter, said threshold calculation unit corresponding

to a low pass filter, said first gain parameter setting said first bandwidth, said second gain parameter setting said second bandwidth.

24. The method of claim 13 further comprising determining said absolute value of said difference and comparing said absolute value with said first value, said comparison triggering the transmission of a bandwidth indicator to a threshold calculation unit, said bandwidth indicator indicating which of said bandwidths said threshold calculation unit is to perform said calculation according to.

25. An article of manufacture that comprises a description of a semiconductor circuit, said semiconductor circuit comprising:

- a) a threshold calculation unit having an input that receives an input signal, said threshold calculation unit having an output that provides a threshold that slices said input signal, said threshold calculation unit having a first bandwidth and a second bandwidth, said first bandwidth greater than said second bandwidth; and
- b) a feedback loop that receives an indication of the difference between said input signal and said threshold, said feedback loop having an output that controls which of said bandwidths said threshold calculation unit calculates said threshold according to, said feedback loop output indicating said first

bandwidth if the absolute value of said difference is greater than a first value, said feedback loop output indicating said second bandwidth if the absolute value of said difference is less than said first value.

26. The article of manufacture of claim 25 wherein said description further comprises a behavioral level description of said circuit.

27. The article of manufacture of claim 26 wherein said behavioral level description is compatible with a VHDL format.

28. The article of manufacture of claim 26 wherein said behavioral level description is compatible with a Verilog format.

29. The article of manufacture of claim 25 wherein said description further comprises a register transfer level netlist.

30. The article of manufacture of claim 25 wherein said description further comprises a transistor level netlist.

31. A method, comprising:

calculating a threshold for a signal according to a first bandwidth if said signal is greater than said threshold plus a first value or if said signal is less than said threshold minus said first value; and

calculating said threshold for said signal according to a second bandwidth if said signal is not greater than said threshold plus said first value and if said signal is not less than said threshold minus said first value, said first bandwidth greater than said second bandwidth.

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